CEUR Workshop Proceedings 2017 vol.2022, pages 326-333

Lobachevskii DML: Towards a semantic digital mathematical library of Kazan University

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Abstract

The digital mathematical library Lobachevskii DML is one of the national initiatives that have emerged in the past decade in different countries of the world. During this time, the formed technical and organizational conditions allowed making mathematicians' dreams of a global World Digital Mathematical Library (WDML) a reality. Following the vision approved by the International Mathematical Union, we started the Lobachevskii DML project in 2017 - the year of the 225-th anniversary of the birth of the brilliant mathematician Nikolai Ivanovich Lobachevskii, the founder of non-Euclidean geometry, the rector of the Kazan University. The main task of Lobachevskii DML project is the development of tools for managing mathematical content, which take into account not only the specifics of mathematical texts, but also the features of processing Russian-language texts. A particular task of creating this digital library is the integration of mathematical resources of Kazan University. Therefore, the original goal of the project was to build up a sound basis for a digital archive comprising the relevant mathematical literature published for 213 years of the existence of Kazan University and stored in the libraries of the University and Kazan. According to our assumption, the digital library Lobachevskii DML should be endowed with all conceivable necessary functions and services, making it a comprehensive and up-to-date live DML, generally respected and used by the local as well as the global mathematical community. From the very beginning, we had in mind that the Lobachevskii DML should constitute a building block for the envisioned global WDML. In this paper, the results of the implementation of the digital mathematical library Lobachevsky-DML are presented. We describe the purpose of creating this digital library, methods of managing mathematical content based on semantic technologies. The following show how Lobachevskii DML interacts with the information systems of scientific journals. We also present a system of services to support the life cycle of a mathematical document and highlight technologies for supporting new forms of scientific publications and providing integration services with other digital mathematical archives and libraries.

Keywords

Digital mathematics library, DML, Lobachevskii DML, Semantic publishing, Semantic technologies, World Digital Mathematics Library (WDML) project

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